Data Systems Working Group Report

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September 18, 2014

Aura Science Meeting - Data Systems Working Group

College Park, MD

Jet Propulsion Laboratory
California Institute of Technology

Topics

- Instrument Team Ground Data System Reports
  - TES (Scott Gluck)
  - MLS (Elmain Martinez)
  - OMI (Jacques Claas)
- Aura HDF-EOS Guidelines
- GES DISC Status and Data Preservation (James Johnson)
- Mission Close-out and Decommissioning (Elmain Martinez)
- ESDIS Report (David Batchelor)
- The MLS SCF: Planning for Future User Support (Brian Knosp)
- JPL CO2 Virtual Science Data Environment (Brian Knosp)

TES

- Safe-mode events and failure of Laser B subsystem
  - Flight Operations team implemented macro modifications
  - Changes in apparent Laser frequency required changes to calibration files but not to underlying data processing software
- Standard processing carried out by SIPS
  - Release 13.1 reprocessing campaign
  - Level 1B, Level 2, and Level 3
- Joint TES-OMI joint ozone product under development
  - Targeted for late-2014 release
- Processing joint TES-MLS CO product
  - Delivery of standard product began mid-April 2014
  - Utilizes ASIPS envronment
  - Update the TES ground data systems to 64 bits for executables and libraries

MLS

- Instrument aging: problems and solutions
  - Loss of Band 13 :: standard HCl product from Band 14 not Band 14
  - Loss of Band 12 :: standard N2O product from Band 3
  - THz laser decline :: level 1 accepts lower counts
  - GMEA failure :: calibration files updated for “B”-side scan table
- V4 will replace the 2 current versions
  - Reduced effect of cloud contamination, especially on CO
  - Milder kink in most ozone profiles
  - New Methanol standard product
  - New Level 3 BrO product
- New algorithm more demanding of resources
  - Requires more memory
  - Individual chunks sometimes refuse to exit normally; must be killed either manually or by an automatic clean-up
- Preservation efforts underway—scanned material put into Docushare

OMI

- Standard products still at Data Collection 3
- Row anomaly corrected at Level 1
  - Affected ground pixels identified using flags
  - In changes to the identified pixels, the dates will be post-processed in level 1, and reprocessed in level 2 and above
- Analysis of all Level 1B data underway searching for trends, errors, or omissions in calibration parameters
- In case of such a finding, a decision will be made whether to reprocess all Level 0 data for a new Collection 4
- Such a reprocessing would take in a few years; not beginning before 2017
- Enhanced NASA security required changes to interface between Goddard SIPS and KNMI
- Preservation efforts yet to begin

Aura HDF-EOS Guidelines

- Current version updated and approved for release
- Google searches still find outdated versions
- We will create a single link to the latest version, probably on the NASA Aura website
- Recent changes due to doi_identifier and iso 19115 metadata
- Next version will include
  - Metadata appropriate to joint products with non-Aura instruments, e.g. OMI+MODIS
  - Joint products spanning three or more instruments
  - Non-Aura data products and derived products
  - References to HDF-EOS structure

GES DISC Status and Data Preservation

- Updated software and systems, e.g. S4PA, OPeNDAP
- Upgrading web site and the data explorer tool Giovanni
- Developed a prototype of an OMI L2 data viewer (see poster by Jennifer Wei)

- System configured for new MLS v4, awaiting data and docs

- HIRDLS Project Data Preservation documents completed and in GES DISC Fedora Commons system; also TOMS and UARS
- Preserved items must fit into categories specified in NASA Earth Science Data Preservation Content Specification 423-SPEC-001
- GES DISC participated in the ESDSWG Data Preservation Session led by Elmain Martinez

Mission Close-out and Decommissioning

Exercise, call it “Phase F”: Plan for a directive to complete reprocessing and shut down MLS within 2 years

- Problem: the Science Team likely to want one final set of corrections to the algorithm, delaying start of reprocessing
- Problem: if directive comes in 2023, complete reprocessing would take 4 years with current speeds

Possible solutions

- Plead for more time and resources from NASA
- Seek additional processing help from other JPL missions
- Seek additional processing help from other NASA or shared government facilities

ESDIS report

Data preservation

- NASA provides a “research archive”, not a “permanent archive”
- Responsibilities persist beyond the lives of the missions that generated the data

Data management

- Data held at any DAAC available fom a single-point-of-access
- REVERB is the web access to all EOS Clearing House (ECHO) data
- Planning to merge GCMD and ECHO repositories
- Global Image Browse Sevice (GIBS)
- Land Atmospheres Near-real time Capability for EOS (LANCE)

The MLS SCF: Planning for future user support

- Supports MLS algorithm and software development, scientific analysis and quality assesment
  - 64-node computing cluster
  - More than 40 desktop computers and servers
  - 1PB of raw disk space
  - 4-dive tape jukebox for backup
- Supports MLS researchers and associates with full access to data holdings
- Supports external researchers with web access and data expertise; e.g,
  - MLS website
  - NASA Worldview
  - WMO Antarctic Ozone Bulletin
- What happens after close-out
  - We can (probably) preserve post-processed data products
  - Can we preserve infrastructure?

JPL CO2 Virtual Science Data Environment

- https://co2.jpl.nasa.gov
- Single point-of-access to satellite CO2 data
  - ACOS, AIRS, OCO2, TES, TCCON (ground-based)
  - Tools for common data operations
  - Some information on how to choose which data sets as appropriate
- Provides a query service which is WPS-compilant based on PyWPS
- Cold be model or starting point for similar efforts pulling together satellite data for other products
- Access to preliminary OCO2 data requires registration

General topics

- Name will change to Data Systems and Preservation Working Group
- Future meetings will include reports by each instrument team to meet content preservation specification
- The Aura File Format Guidelines will continue with content to be reviewed at future DSPWG meetings
- Future meetings will be held with each Aura Science Team Meeting